IN THE SPECIFICATION:

Page 1, replace the paragraphs starting at line 1 and ending at line 20, with the following amended paragraphs.

Technical Field

CROSS-REFERENCED TO RELATED APPLICATIONS

This application is a continuation of Application Serial No. 10/087,931, filed March 5, 2002, now abandoned, which was a continuation of Application Serial No. 09/829,967, filed April 11, 2001, now abandoned, which was a continuation of Application Serial No. 08/837,329, filed April 11, 1997, now abandoned, which was a continuation of Application Serial No. 08/695,774, filed August 8, 1996, now abandoned, which was a continuation of Application Serial No. 08/554,030, filed November 6, 1995, now abandoned, which was a continuation of Application Serial No. 08/394,219, filed February 24, 1995, now abandoned, which was a continuation of Application Serial No. 236,159, filed May 2, 1994, now abandoned, which was a continuation of Application Serial No. 073,287, filed June 7, 1993, now abandoned, which was a continuation of Application Serial No. 925,297, filed August 6, 1992, now abandoned, which was a continuation of Application Serial No. 704,842, filed May 20, 1991, now abandoned, which was a continuation of Application Serial No. 525,319, filed May 21, 1990, now abandoned, which was a continuation of Application Serial No. 204,553, filed April 12,

1988, now abandoned, which derived from PCT/JP88/00336, filed April 1, 1988. The priorities of these applications are requested.

This invention relates to Fe-B-R-based magnetically anisotropic magnets that are not demagnetized when they are mounted on electric motors for vehicles and used in high temperature ~~environment~~ environments. The invention provides the magnetically anisotropic magnets that do not necessarily[,] require expensive heavy rare earth elements and can keep ~~the~~ a high maximum energy product and develop ~~the~~ a high coercive force. The invention also provides ~~said~~ such magnets ~~with~~ at low cost.

Background Art

~~The permanent~~ Permanent magnet materials are ~~one of very~~ important ~~materials applied to~~ components of electric and electronic goods and they are used in a very wide area covering various types of home electric appliances, parts for automobiles and communication ~~equipments~~ equipment and peripherals for large scale computers.

Recently, with the need for high performance and ~~miniaturi-zation~~ miniaturization of ~~the~~ electric and electronic ~~equipments~~ equipment, ~~the~~ high performance of the permanent magnets ~~are~~ is required. Traditionally, the rare earth cobalt magnet is well known to comply with these needs. However, the rare earth cobalt magnet needs a large amount of expensive samarium as the rare earth which is not abundantly contained in the rare earth ore and also needs cobalt by 50-60 weight %.

Page 2, replace the paragraphs starting at line 14 and ending at line 24, with the following amended paragraphs.

It is well known that the Fe-B-R-based magnetically anisotropic sintered magnets show almost constant temperature coefficient of coercive force (iHc), about minus 0.6 percent per a degree centigrade regardless of some modifications of compositions or manufacturing methods when Nd or Pr are selected as a rare earth element.

Therefore, it is necessary for the magnets to have higher coercive force to be used in the severe environment as mentioned above.

The applicant has further proposed that the Fe-B-R-based permanent magnets using heavy rare earth elements Dy, Tb as part of R complies with this higher coercive force requirement. (EPC. Publication No. 83 109 501.3).

Page 3, replace the paragraphs starting at line 13 and ending at line 27, with the following amended paragraphs.

In view of these situations at present, the object of this invention is to provide the Fe-B-R-based magnetically anisotropic sintered magnets which do not necessarily need expensive heavy rare earth elements and do not cause rapid decrease in maximum energy product due to increase in coercive force, keeping more than $20MGO_e$ and having high coercive force more than $15KO_e$.

~~Disclosure~~ Summary of the Invention

In this invention, compositions of the Fe-B-R based magnetically anisotropic sintered magnets were considered to improve the coercive force by increasing an amount of B, and as the result of these considerations, it was found that an amount as small as impurity level contained in industrial raw materials give rise to increase in coercive force and said sintered magnets having very large coercive force without reducing the maximum energy product are obtained by controlling the amount of these elements represented below.

Page 4, replace the paragraphs starting at line 10 and ending at line 22, with the following amended paragraphs.

The present invention provides a magnetically anisotropic sintered magnet consisting essentially of, by atomic percent, 14-18% R wherein R is Nd and/or Pr, 9-18% of B, 0.5-5% A wherein A is the total of 0.2-2.0% Al, 0.01-0.5% Si and 0.03-0.6% Cu and ~~a leas~~ at least one of 0.02-3.0% Cr, 0.05-1.0% Mn and 0.02-1.0% Ni and the balance being Fe.

The present invention also provides magnetically anisotropic sintered ~~magnet~~ magnets consisting essentially of, by atomic percent, 14-18% R wherein R is Nd and/or Pr, 9-18% B, 0.5-5% A wherein A is the total of 0.2-2.0% Al, 0.01-0.5% Si and 0.03-0.6% Cu and at least one of the 0.02-3.0% Cr, 0.05-1.0% Mn and 0.02-1.0% Ni, less than 2.0% of a total amount of less than 2.0% of at least one selected from V, Mo, Nb

and W and less than 1.0% at least one selected from of Zn, Ti, Zr, Hf, Ta, Ge, Sn, B, Ca, Mg and the balance being Fe.

Page 6, replace the paragraph starting at line 1 and ending at line 5, with the following amended paragraph.

Detailed Description of Preferred Embodiments

Of the Invention

In this invention, the rare earth R ~~are~~ is Nd and Pr, and one of them is usually used to satisfy the requirement but a mixture of them may be used to comply with circumstance of material procurement.

Page 6, replace the paragraph starting at line 19 and ending at line 21, with the following amended paragraph.

Further, ~~the~~ employing B within the range of 10 at%-17 at% permits the magnets to obtain coercive ~~forces~~ force of more than 18KO_e without addition of ~~heavey~~ heavy rare ~~earths~~ earth elements, ~~then~~ thus this range is especially preferable.

Page 7, replace the paragraph starting at line 26 expanding to page 8 line 1, with the following amended paragraph.

When a total amount of adding of the additive elements A, namely, Al, Si, Cu, Cr, Mn and Ni is less than 0.5 at%, this has no good effect on coercive force enhancement. The total amount of adding exceeding 5.0 at% causes ~~the~~ a decrease ~~of~~ in the maximum energy product, thus the range of 0.5 at%-5.0 at% should be observed.

Page 7, replace the paragraph starting at line 6 and ending at line 11, with the following amended paragraph.

However, if the magnet contains at ~~lest~~ least one of V, Mo, Nb and W each having a content more than 2.0 at%, or at least one of Zn, Ti, Zr, Hf, Ta, Ge, Sn, Bi, Ca, Mg and Ga each having a content more than 1.0 at%, and further, if a total amount of selected elements exceeds 2.0 at% content, these ~~causes~~ cause a decrease ~~of~~ in the maximum energy product and are not preferable.

Page 13, replace the paragraphs starting at line 6 and ending at line 16, with the following amended paragraphs.

Similarly to Example 1, ingots having 16Nd9B remainder Fe-based compositions in at% in which additives from the following set 0.5A1-0.18Si-0.12Cu-0.3Mn-0.5Cr-0.5Ni (total 2.1 at%) were made by substituting for Fe. The effect of the elements on the magnetic properties was studied. ~~Measure-ments~~ Measurements of the coercive force are shown in Table 1.

As can be seen from Table 1, the effect of Al, Si and Cu is remarkable and if any one of these elements ~~lacks~~is missing, the coercive force decreases.

Concerning Mn, Cr and Ni, the existence of any one of these can keep the coercive force from decreasing. ~~Lack~~ Omission of these elements ~~decrease~~ decreases the coercive force.